

IN THE CLAIMS:

Please amend the claims as follows:

1-23. (canceled)

24. (new) A series resonant capacitor discharge system,
comprising:

an electric circuit loop comprising a plurality of
electrical components, said plurality of electrical components
comprising

a first capacitor comprising a first terminal and a
second terminal,

a second capacitor likewise comprising a first
terminal and a second terminal,

a common node connecting the first terminal of the
first capacitor to the first terminal of the second
capacitor,

a switching device, and

a first inductor, wherein the switching device and the
first inductor are connected in series between the second
terminal of the first capacitor and the second terminal of
the second capacitor; and

a controlled voltage source comprising

a first output connected to the second terminal of the first capacitor, and

a second output connected to the second terminal of the second capacitor;

wherein the controlled voltage source places a first voltage on said first output while disconnecting the second output from the second terminal of the second capacitor during a first charging cycle;

wherein the switching device creates a first electrical path from said second terminal of said first capacitor to said second terminal of said second capacitor through said first inductor thereby creating a first flow of electric current during a first discharge cycle subsequent to said first charging cycle;

wherein the controlled voltage source places a second voltage on said second output while concurrently disconnecting the first output from the second terminal of the first capacitor during a second charging cycle subsequent to said first discharge cycle; and

wherein the switching device creates a second electrical path from said second terminal of said second capacitor to said second terminal of said first capacitor through said first inductor thereby creating a second flow of electric current

during a second discharge cycle subsequent to said second charging cycle.

25. (new) The series resonant capacitor discharge system of claim 24, further comprising a motor shaft;

wherein the first flow of electric current produces a first magnetic field around said first inductor and said motor shaft interacts with said first magnetic field to produce a rotating motion of said motor shaft.

26. (new) The series resonant capacitor discharge system of claim 25, wherein said first inductor comprises an electric motor phase winding.

27. (new) The series resonant capacitor discharge system of claim 25, further comprising:

a capacitor drain circuit connected to the second terminal of the first capacitor and the second terminal of the second capacitor, wherein said capacitor drain circuit removes a first residual electric charge from said second terminal of said second capacitor during said first charging cycle and removes a second residual electric charge from said second terminal of said first capacitor during said second charging cycle.

28. (new) The series resonant capacitor discharge system of claim 25, further comprising:

a shaft position sensor;

a switch control circuit; and

magnetic material mounted on said motor shaft; whereby

said shaft position sensor detects movement of said magnetic material corresponding to said rotating motion of said motor shaft, said shaft position sensor transmits a signal to said switch control circuit, and said switch control circuit controls said controlled voltage source.

29. (new) The series resonant capacitor discharge system of claim 27, further comprising:

a shaft position sensor;

a switch control circuit; and

magnetic material mounted on said motor shaft; whereby

said shaft position sensor detects movement of said magnetic material corresponding to said rotating motion of said motor shaft, said shaft position sensor transmits a signal to said switch control circuit, and said switch control circuit controls said controlled

voltage source and said capacitor drain circuit.

30. (new) The series resonant capacitor discharge system of claim 25, wherein said switching device comprises a mechanical switch.

31. (new) The series resonant capacitor discharge system of claim 30, wherein said motor shaft comprises a motor shaft gear, said mechanical switch comprises a switch gear, and said switch gear is driven by said motor shaft gear during said rotating motion to produce a rotating motion of said mechanical switch.

32. (new) The series resonant capacitor discharge system of claim 28, wherein said switching device comprises a solid state switch.

33. (new) The series resonant capacitor discharge system of claim 32, wherein said solid-state switching device comprises a silicon-controlled rectifier.

34. (new) A series resonant capacitor discharge system, comprising:

an electric circuit loop comprising a plurality of electrical components, said plurality of electrical components comprising

a first capacitor comprising a first terminal and a second terminal,

a second capacitor likewise comprising a first terminal and a second terminal,

a common node connecting the first terminal of the first capacitor to the first terminal of the second capacitor,

a first switching device,

a second switching device,

a first inductor, wherein the first switching device and the first inductor are connected in series between the second terminal of the first capacitor and the second terminal of the second capacitor;

a second inductor, wherein the second switching device and the second inductor are connected in series between the second terminal of the first capacitor and the second terminal of the second capacitor; and a controlled voltage source comprising

a first output connected to the second terminal of the first capacitor, and

a second output connected to the second terminal of the second capacitor;

wherein the controlled voltage source places a first voltage on said first output while disconnecting the second output from the second terminal of the second capacitor during a first charging cycle;

wherein the first switching device creates a first electrical path from said second terminal of said first capacitor to said second terminal of said second capacitor through said first inductor thereby creating a first flow of electric current during a first discharge cycle subsequent to said first charging cycle;

wherein the controlled voltage source places a second voltage on said second output while concurrently disconnecting the first output from the second terminal of the first capacitor during a second charging cycle subsequent to said first discharge cycle; and

wherein the second switching device creates a second electrical path from said second terminal of said second capacitor to said second terminal of said first capacitor through said second inductor thereby creating a second flow of electric current during a second discharge cycle subsequent to said second charging cycle.

35. (new) The series resonant capacitor discharge system of claim 34, further comprising a motor shaft;

wherein the first flow of electric current produces a first magnetic field around said first inductor and said motor shaft interacts with said first magnetic field to produce a rotating motion of said motor shaft.

36. (new) The series resonant capacitor discharge system of claim 35, wherein said first inductor comprises an electric motor phase winding.

37. (new) The series resonant capacitor discharge system of claim 35, further comprising:

a capacitor drain circuit connected to the second terminal of the first capacitor and the second terminal of the second capacitor, wherein said capacitor drain circuit removes a first residual electric charge from said second terminal of said second capacitor during said first charging cycle and removes a second residual electric charge from said second terminal of said first capacitor during said second charging cycle.

38. (new) The series resonant capacitor discharge system of

claim 35, further comprising:

a shaft position sensor;

a switch control circuit; and

magnetic material mounted on said motor shaft; whereby

said shaft position sensor detects movement of said magnetic material corresponding to said rotating motion of said motor shaft, said shaft position sensor transmits a signal to said switch control circuit, and said switch control circuit controls said controlled voltage source.

39. (new) The series resonant capacitor discharge system of

claim 37, further comprising:

a shaft position sensor;

a switch control circuit; and

magnetic material mounted on said motor shaft; whereby

said shaft position sensor detects movement of said magnetic material corresponding to said rotating motion of said motor shaft, said shaft position sensor transmits a signal to said switch control circuit, and said switch control circuit controls said controlled voltage source and said capacitor drain circuit.

40. (new) The series resonant capacitor discharge system of claim 35, wherein said first switching device comprises a mechanical switch.

41. (new) The series resonant capacitor discharge system of claim 40, wherein said motor shaft comprises a motor shaft gear, said mechanical switch comprises a switch gear, and said switch gear is driven by said motor shaft gear during said rotating motion to produce a rotating motion of said mechanical switch.

42. (new) The series resonant capacitor discharge system of claim 41, wherein said first switching device comprises a solid state switch.

43. (new) The series resonant capacitor discharge system of claim 42, wherein said solid-state switching device comprises a silicon-controlled rectifier.